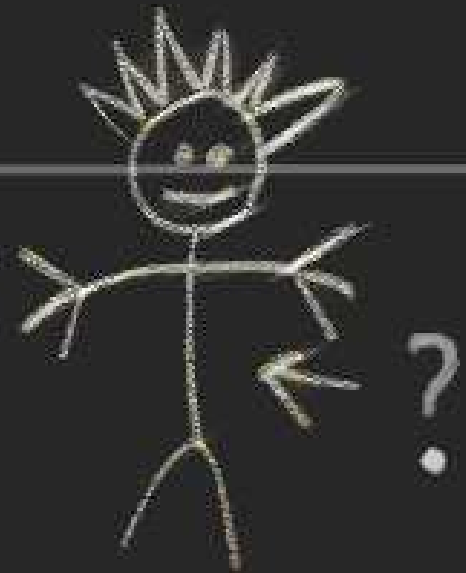


# EVERYDAY MATHEMATICS EVENING



Presented by:  
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The logo for 'Everyday Mathematics' is displayed on a white rectangular background. The word 'Everyday' is written in a blue, serif font, and the word 'Mathematics' is written below it in a bold, blue, sans-serif font.

**Everyday  
Mathematics**

- 1. Research**
- 2. Results**
- 3. Philosophy**
- 4. Curriculum Overview**
- 5. Algorithms**
- 6. Lesson Overview**

# EVERYDAY MATHEMATICS

- Everyday Mathematics is a comprehensive Pre-K through 6th grade mathematics curriculum developed by the University of Chicago School Mathematics Project.
- It is currently being used in over 185,000 classrooms by almost 3,000,000 students.

# Research-based

- No other math curriculum has shown to have the greatest potential on student achievement than *Everyday Mathematics*
- **What Works Clearinghouse** has cited the *Everyday Mathematics* curriculum with the highest rating of any other mathematics curriculum.

# Haldane's Success with Everyday Math

## 2011 Math State Assessment Scores

Grade	% on Grade Level	% Above Grade Level
3	81%	31%
4	90%	45%
5	84%	48%
6	90%	51%
7	87%	53%

# Mean Scale Scores of Neighboring Districts

	Haldane	Garrison	Putnam Valley	North Salem
3rd Grade	699	691	689	697
4th Grade	704	708	689	700
5th Grade	700	705	696	695

# PHILOSOPHY

- ❑ Students build understanding and develop skills as a result of many meaningful and connected learning experiences.
- ❑ Mastery of math concepts and skills comes from repeated exposure and practice, not just one lesson!
- ❑ Students build on math concepts that they already know, while making connections and gradually learning difficult and more challenging content.
- ❑ Think of this process as a **SPIRALING STAIRCASE!** In order to help students develop mastery, the math content is taught in a **REPEATED** fashion: Primary grades have more informal exposure, which lead to formal and direct instruction in intermediate grades.
- ❑ Some concepts are introduced early without the expectation of mastery, while other concepts and skills are expected to be mastered.

# Curriculum Components

## **REAL LIFE PROBLEM SOLVING:**

Numbers, skills, and mathematical concepts are linked to every day life situations.

## **BALANCED INSTRUCTION:**

Each Everyday Mathematics lesson includes time for a whole-group lesson as well as small-group, partner, or individual activities. This provides opportunities for discussion, hands-on explorations, long term practice, and on going projects.

# Curriculum Components (Cont.)

## **MULTIPLE METHODS FOR BASIC SKILLS PRACTICE:**

written and choral fact drills, mental math routines, practice with math fact triangles, [Math Boxes](#) (daily sets of problems), homework, timed tests, and a variety of math games.

## **EMPHASIS ON COMMUNICATION:**

Students are encouraged to explain and discuss their mathematical thinking in their own words.

# Curriculum Components (Cont.)

## **STRONG HOME-SCHOOL PARTNERSHIPS:**

Daily Home Links (K-3) and Study Links (4-6) provide opportunities for family members to participate in student learning.

## **APPROPRIATE USE OF TECHNOLOGY:**

Everyday Mathematics teaches students how to use technology appropriately. The curriculum includes many activities in which learning is enhanced and extended through the use of calculators. Any activity that is intended to reinforce basic computation skills are clearly marked with the “No Calculator” sign.

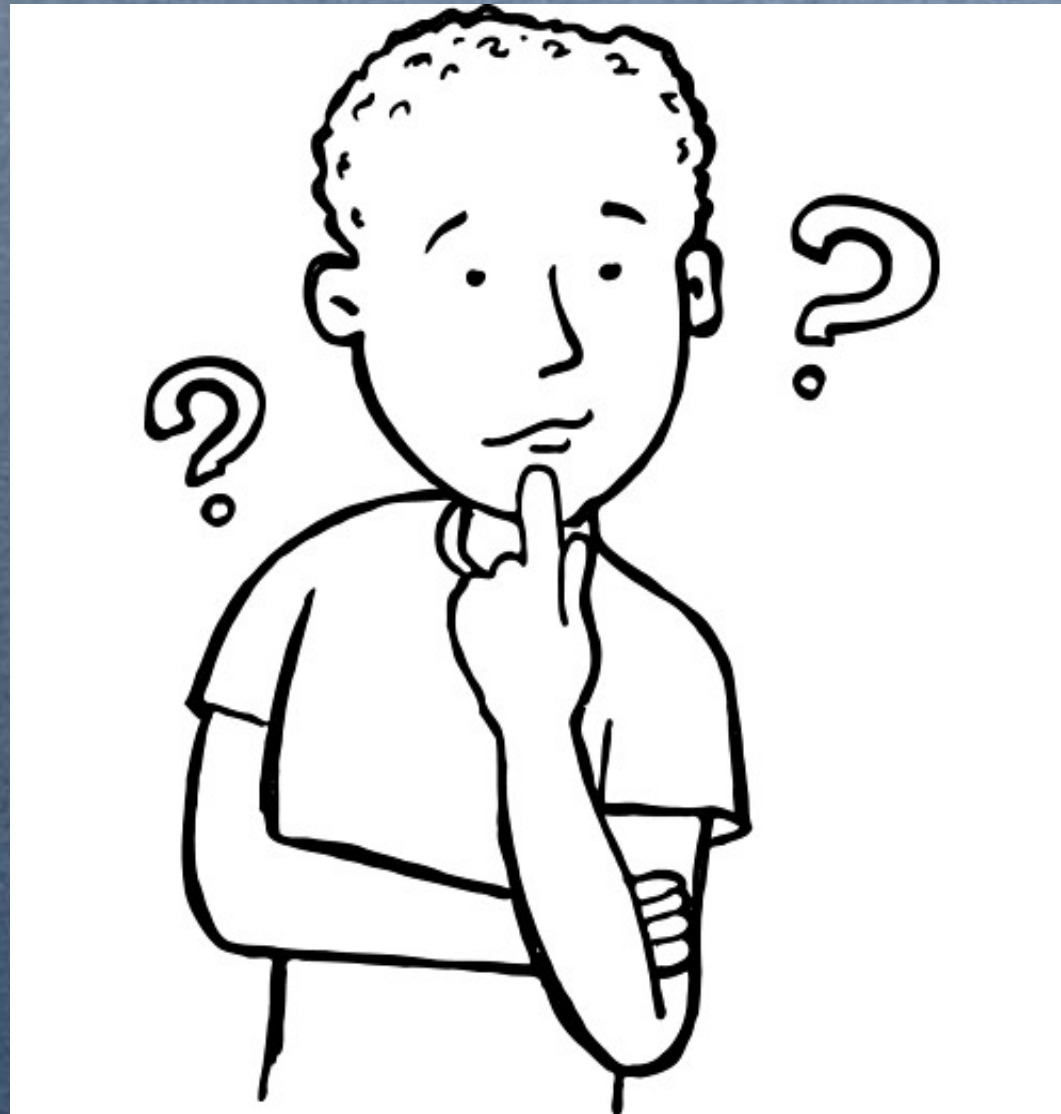
How does Everyday Mathematics address basic facts?  
When should students be expected to know their facts?

End of 3rd Grade: Students should master their 1, 2, 5, and 10 multiplication facts.

End of 4th Grade: Students should know multiplication facts with automaticity. In addition, they should be familiar with basic division facts.

Beginning of 5th Grade: Multiplication and division facts are reinforced.

So....What are the alternative algorithms? And...



# Why are these part of the Everyday Mathematics curriculum?

- For decades, all American school children have been taught one standard procedure for each of the four basic operations of arithmetic. These "standard" algorithms, like the regrouping ("borrowing") algorithm for multi-digit subtraction and the long division algorithm, are not the only way to perform these operations. There are many alternative algorithms taught in other countries. Compared to the standard U.S. algorithms, many of these alternative algorithms are more efficient and easier to learn.
- Research has shown that teaching the standard U.S. algorithms fails with large numbers of children, and that alternative algorithms are often easier for children to understand and learn.

# Algorithms

An algorithm is a well-defined procedure or set of rules guaranteed to achieve a certain objective. You use an algorithm every time you follow the directions to put together a new toy, use a recipe to make cookies, or defrost something in the microwave.

In *Everyday Mathematics*, students first learn to understand the *mathematics* behind the problems they solve. Then, quite often, they come up with their own unique working algorithms that prove that they “get it.” Through this process, they discover that there is more than one algorithm for computing answers to addition, subtraction, multiplication, and division problems. Having students become comfortable with algorithms is essential to their growth and development as problem solvers.

# Partial Sums

268

+ 483

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600

Add the **hundreds** ( $200 + 400$ ) →

Add the **tens** ( $60 + 80$ ) →

Add the **ones** ( $8 + 3$ ) →

+ 11

Add the **partial sums** ( $600 + 140 + 11$ ) →

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751



# TRADE FIRST ALGORITHM

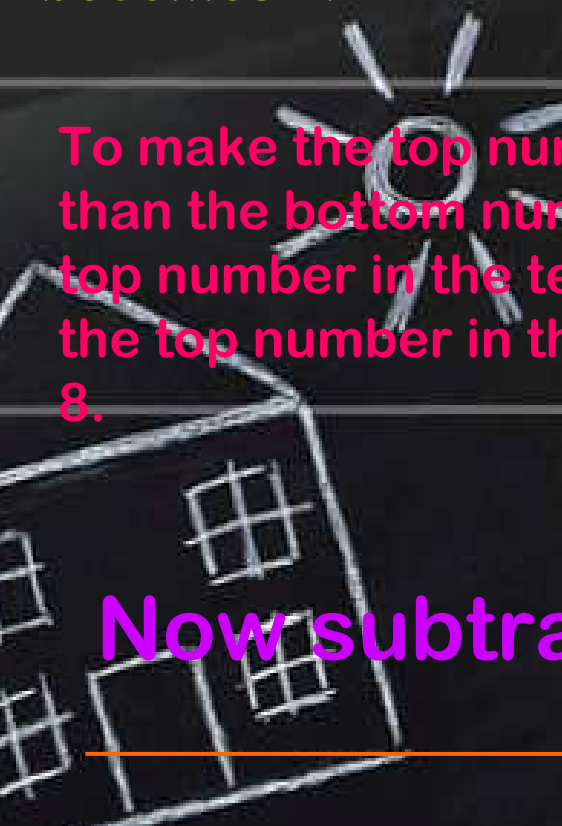
In order to subtract, the top number must be larger than the bottom number

$$\begin{array}{r} 8 \\ \cancel{9} \\ - 3 \\ \hline 5 \end{array} \qquad \begin{array}{r} \cancel{2} \\ \cancel{3} \\ - 5 \\ \hline 7 \end{array} \qquad \begin{array}{r} 12 \\ \cancel{2} \\ - 6 \\ \hline 6 \end{array}$$

To make the top number in the ones column larger than the bottom number, trade 1 ten. The top number becomes 12 and the top number in the tens column becomes 2.

To make the top number in the tens column larger than the bottom number, trade 1 hundred. The top number in the tens column becomes 12 and the top number in the hundreds column becomes 8.

Now subtract column by column in any order



# Partial Products Algorithm

To find  $67 \times 53$ , think of 67 as  $60 + 7$  and 53 as  $50 + 3$ . Then multiply each part of one sum by each part of the other, and add the results

$$\begin{array}{r} 67 \\ \times 53 \\ \hline \end{array}$$

Calculate  $50 \times 60$

3,000

Calculate  $50 \times 7$

350

Calculate  $3 \times 60$

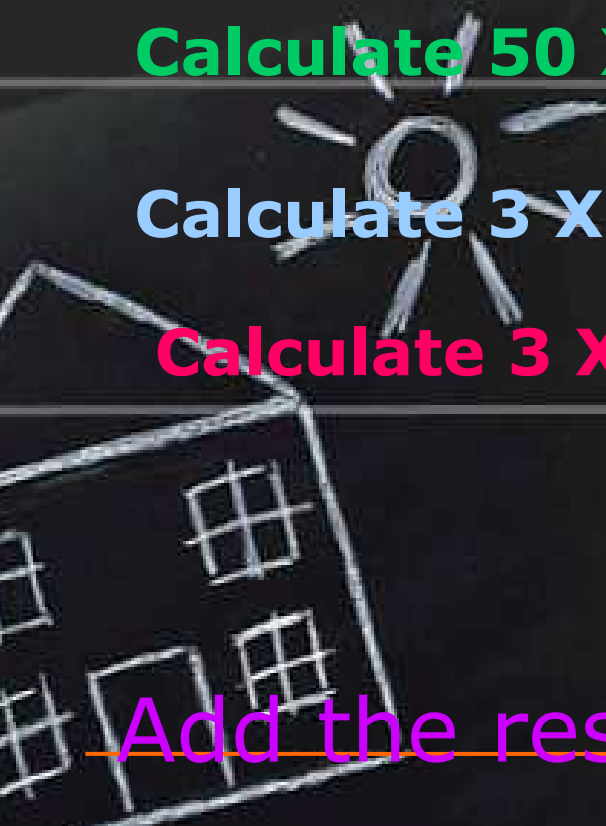
180

Calculate  $3 \times 7$

+ 21

Add the results

3,551



# PARTIAL QUOTIENT ALGORITHM

The Partial Quotients Algorithm uses a series of “at least, but less than” estimates of how many b’s in a. You might begin with multiples of 10 – they’re easiest.

There are at least ten 12’s in 158 ( $10 \times 12 = 120$ ), but fewer than twenty. ( $20 \times 12 = 240$ )

There are more than three ( $3 \times 12 = 36$ ), but fewer than four ( $4 \times 12 = 48$ ). Record 3 as the next guess

Since 2 is less than 12, you can stop estimating. The final result is the sum of the guesses ( $10 + 3 = 13$ ) plus what is left over (remainder of

$$\begin{array}{r} \text{13 R2} \\ 12 \overline{) 158} \\ \underline{- 120} \quad \text{10 – 1st guess} \\ 38 \\ \underline{- 36} \quad \text{3 – 2nd guess} \\ 2 \\ \text{13} \\ \text{Sum of guesses} \end{array}$$

# More Examples of Algorithms in Everyday Mathematics

[http://em-ccss.everydaymathonline.com/g\\_login.html](http://em-ccss.everydaymathonline.com/g_login.html)

# What Can Parents Do to Help?

- Log on to the [Everyday Mathematics](#) website
- Read the family letters – use the answer key to help your child with their homework
- Ask your child to teach you the math games and play them.
- Ask your child to teach you the new algorithms
- Contact your child's teacher with questions or concerns
- Log onto your child's teacher's website